description of 60 feet area can pass as much as 150,000 gallons per day, or 1,500 gallons per foot superficial, with a 12 ft. 6 in. head; but no immediate reason appears for supposing that the slight difference in the arrangement of the filtering medium in this, and in the old system of horizontal sand beds, can give rise to so vast a difference in the results. The cost of each filter to pass 150,000 gallons per day is about 220*l*., with an addition of 100*l*. for foundations. To filter 1,000,000 gallons per day would then require an outlay, for this part of the establishment alone, above 2,000*l*., whilst, upon Mr. Thom's statement, the Paisley filter only cost 870*l*. for that quantity. According to the statement furnished by the patentee, the cost of filtering by Maurras's system is about 1*l*. 3*s*. 4*d*. per million gallons.

Among the domestic filters, Lipscombe's deserves favourable mention. The process adopted is, to pass the water through a series of nine layers of animal charcoal mixed with sand, or some other material, for the purpose of maintaining the porosity. Each layer is about one inch in thickness, and is confined between thin perforated slabs. More satisfactory results would, it appears, be obtained, if the thickness of the filter beds were increased, as their constituents are precisely of the nature best calculated to act both chemically and mechanically. The peculiarities of the apparatus known as Stirling's patent, consist in a series of boxes, or cisterns, so contrived, that the reservoir or pipe by which they are supplied has a head of 2 ft. 6 in. The water enters each filter at the bottom, and after passing through three strata of filtering media, flows off from the top. The filtering materials consist of sand and vitrified limestone; but the patentee, although he states that the water has no decomposing effect upon the latter, appears to regard it as contributing much to the chemical purity of the water.

Within a short period, Messrs. Ransome and Parsons have propo ed an application of their filtering stone, which appears likely to satisfy the conditions essential to the success of that operation. The stone itself is an artificial sandstone, whose degree of porosity can be regulated at pleasure. It is obtained by dissolving flint in a caustic alkali, under pressure in a steam boiler. For the purpose of town filters, it is proposed that slabs of this stone, about two inches in thickness, should be substituted for the common tiles used in the other filters. Upon the top of these slabs is next to be placed any medium capable of acting chemically upon the water; indeed, under all circumstances, it is necessary to introduce something between these slabs and the unfiltered water, which may be capable of retaining a portion of the impurities, and of being itself easily removed; but as the principal filtration is performed by the stone, only such a quantity of sand is required as is necessary to retain the grosser matters,—probably from 3 to 6 inches would be sufficient. The top of this sand could be cleared off very easily by a trowel or rake. If it be desired to act chemically upon the water at the same time, the animal charcoal, or the silicates of lime, or of alumina, would be placed under the sand, by which the total thickness would be increased to about 1 foot from the under side of the slabs. The head of water required to work these filters is very small; with 4 feet pressure, the two slabs, covered with 3 inches of sand, have filtered at the rate of 340 gallons per foot superficial per day. The price of the slabs is stated to be 3*s*. per foot superficial; and if the additional works necessary in the construction be also taken into account, the total expense of a filter of this description, calculated to yield one million gallons per day, would not exceed 1,400*l*.

In the course of the conversation which followed, Mr. Donaldson said, the nature of the water supplied must regulate the mode of filtration. Some water contained foreign matters which could be disengaged by mechanical means; but still the water might be of an objectionable nature chemically, and require another operation to purify it. He thought, therefore, that a strict analysis, before filtration, was desirable, because water might be filtered, and even distilled, and would yet become impure in a few hours afterwards, whereas without those processes it might be preserved pure for many days. With regard to the Government scheme for the water supply of the metropolis, he thought that Government control in any such matter must be condemned, and the undertaking ought to be left to private enterprise and competition, due regard being given to the public interest.

Sir Thomas Deane said, that in the year 1815 he erected a very large tank in the dockyard at Cork, to afford a rapid supply of water for twenty sail of the line. It contained 5,000 tons of *rain* water. It was intended to make the tank below the surface, but on excavating it was found that the water would percolate through the limestone; the tank was, therefore, put upon the surface. The water passed through two layers of sand, of different quality, and charcoal, and the water so filtered remained sweet and good after a voyage to the West Indies; longer, indeed, than the water from the best springs. It was covered over and protected from the action of the sun; and after a trial of thirty-five years the water was preferred by naval men to any other supplied to the fleet. The tank was built of mountain limestone; on the ground, which was levelled, a course of brickflat in cement was laid; next a course of brick on edge, in cement; over that a thickness of cement; and then 6-inch limestone flags, well worked on the edges, and set in the best cement. The sides of the tank were of limestone ashlar set in cement, and backed with stock brickwork in cement. The size was 200 feet by 100. It had a story over it for a cooperage, covered with slate. To form the floor of this latter, there were cast-iron columns and girders, on which three and a half inch gauged Yorkshire flags were laid, with cement run into a groove in the edges of the joint.

Mr. Tarring mentioned a plan for filtration, successfully adopted at Willesden, in which the water from a large pond, 9 or 10 feet deep, supplied by the surface drainage and land springs, was conveyed through boxes 2 feet square by 18 inches deep; the first filled with sand and coarse gravel; the second with finer gravel; and the third with charcoal and chalk. At the distance of 50 feet the water was received in a shaft, 9 feet deep and a foot square, from which it was pumped up into the house.

Mr. C. H. Smith adverted to an accidental filter on some land belonging to the Duke of Portland, between Mansfield and Clipstone-park. The thick and turbid water of a canal cut for the purpose of irrigation, was so filtered during its gradual progress over the surface of the meadow which it fertilised, that it appeared again in a channel at the lower edge of the ground, as a bright and transparent stream; all the earthy and other impurities having been mechanically separated from it.

THE GREAT CARTOONS OF BERLIN.

Kaulbach's Frieze of the New Museum.—These most recent conceptions of the masters excite the art-writers of Germany to exultation. The cartoon for the above frieze is either completed or sketched; thought merely fixed down in a bird's-eye view, but from an eagle's height. It is again the well-known world-typifying of Kaulbach; first the myths of India, then the graces of Hellas. Amor shapes the lyre, but the shepherd has anticipated him with the tube of reed. Here the architect, instructed by the beaver. Later the box of Pandora, out of which, amongst other *untowards*, "war" also takes its origin. Then come groups of enslaved nations. Another side of the frieze begins with the Egyptian myth, making a transition into that of Rome. The wolf follows Ibis. Enslaved nations cringe before victorious Rome. Then appears the cross: the Roman cohorts, heavy-mailed, shrink back: the old empire crumbles to pieces. Then comes infatuation (*Verblendung*). Nemesis with a branch of the poison-tree in her hand. The last picture shows a veiled personage — *Futurity!* The figure of Sais again. A peacock, the emblem of vanity, sits beside this veiled representation of our times. Two slender libellulas vibrating in the air, are approached by a yawning serpent's head. The painters *express* more than most others might dare otherwise.

Cornelius's Frescoes for the Campo Santo.—The Campo Santo, the royal cemetery, will be erected near the Cathedral (Dom) of Berlin. Its four walls have a length of 180 feet each. On the first and second are represented the life and deeds of the Saviour; on the third those of the apostles—their speaking with the tongues of the spirit. The fourth wall, here also, is destined for the myth of futurity. Each wall will have five principal paintings, above each an appropriate medallion. Beneath the great pictures runs a frieze, representing the works of Christian charity. Of the five paintings of each wall, that in the middle is the principal one, those on the sides representing a figure or group of a more plastic character; some of them being representations of the blessings mentioned in the "Sermon on the mount." The main picture of the fourth wall represents "The Last Judgment." On the right, "The Fall of the Evil Ones." All demons and dark powers are striving here — evil breaks upon Babel. Over it, in the medallion—He on high! who, gloomily and hesitatingly, *still* ordains accomplishment—the *unavoidable*. Quiet, elevation, and simplicity tower over these conceptions,—a quiet most seizing and absorbing. The second side's picture of the fourth wall represents the four horsemen of the Apocalypse, whose hoofs rage over the nations, trampling down everything. Underneath are the people writhing in despair. A gigantic stir and impulse pervades *these* delineations. The medallion above represents the avenging angels, who pour out the cups of wrath, even into the sun, which becomes eclipsed. The cartoons of the four raging horsemen were completed by Cornelius at Rome some years ago, and all has been as he foresaw. He said lately to a friend (*Emma Niendorf*)—"All this must break over the nations, that they become purified."

"SHALL WE KEEP THE CRYSTAL PALACE?"

An able, and it appears a well known though anonymous, writer, under the title of *Denarius*, formally puts this question to the public vote in a brochure wherein he himself pleads strongly in the affirmative. "Shall we keep the Crystal Palace, and have riding and walking in all weathers among flowers, fountains, and sculpture?" That is the taking title of the pamphlet, and in itself it deprecates all denial. And although it would be a fine idea certainly that so extraordinary an edifice should perish with the unparalleled object to carry out which it was called into existence, and thus in history be indissolubly and exclusively associated with that object alone, knowing no decay or disaster, still we should deeply regret that a building so great and so capable of useful appropriation, either as a winter garden, as first suggested in our own columns indeed, or otherwise, even as a more sheltered riding-ground, should at once be cleared away.

Denarius calculates that an annual revenue of 14,000*l*., on a moderate estimate, would be realised by small charges of admission, such as one penny each for foot, and one shilling each for equestrian, promenaders, and would be quite sufficient to keep the edifice in repair. Occasionally, he suggests, there might be *fêtes*, horticultural, floral, agricultural, or others, during which higher rates might be charged. The maintenance of the building moreover, would secure the establishment of similar exhibitions for the future; and he reminds us that there will be a surplus in the hands of the Exhibition Commissioners of about 140,000*l*. at the close of the present Exhibition. At the same time he warns the public, that, unless they make their wishes on the subject known most emphatically before the close of the present session, "The Chief Commissioner of Woods holds the warrant (for its removal), and when we remember the firmness with which he exacted, as a public guardian, the scrupulous observance

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